



Docket No.: 60,130-709; 99MRA0211

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANTS: Kalageros et al.

EXAMINER: Carpenter, Scott

SERIAL NO.: 09/592,751

GROUP ART UNIT: 3612

FILED: June 13, 2000

FOR: CRUMPLE ZONE FOR BODY PANELS

ATTORNEY DOCKET NO: 60,130-709 (99MRA0211)

BOX-AF

Assistant Commissioner for Patents  
Washington, D.C. 20231

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**APPEAL BRIEF**

**GROUP 3600**

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Subsequent to the filing of the Notice of Appeal on February 12, 2003, Appellant hereby submits its brief. Enclosed is a check for the appeal brief fee. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds.

**Real Party in Interest**

The real party in interest is Meritor Light Vehicle Systems, Inc., the assignee of the entire right and interest in this Application.

**Related Appeals and Interferences**

There are no related appeals or interferences.

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### **Status of Claims**

Claims 1-37 are pending in the application including independent claims 1, 12, 14, 20, and 31. Claims 5-9, 12, 13, 17-19, and 25-31 are withdrawn from consideration as being drawn to a non-elected species.

Claims 1, 2, 32, and 33 stand finally rejected under 35 U.S.C. 102(b). Claims 3, 4, 10, 11, 14-16, 20-24, and 34-37 stand finally rejected under 35 U.S.C. 103(a).

### **Status of the Amendments**

All amendments have been entered.

### **Summary of the Invention**

This invention relates to vehicle body panels that crumple in a predisposed manner when impacted. Figure 1 illustrates a vehicle body panel, shown generally at 20, attached to a vehicle 22. The panel 20 is shown used as the hood of the vehicle in Figure 1, but is not just limited to this position. For instance, body panels of the present invention can also be used as front panels on the sides of a vehicle. Indeed, the inventive panels can be used in any exterior vehicle panel location. See Page 3, lines 14-18.

The preferred embodiment, as shown in Figure 2, includes a sheet of polymeric material 24 that is reinforced with spaced reinforcing fibers 26. Preferably, the reinforcing fibers 26 are arranged in a predetermined pattern. For example, the reinforcing fibers could be positioned in spaced rows. Another way of describing the panel is that the panel includes predetermined areas with high concentrations 28 of reinforcing fibers 26 and areas with low concentrations 30 or no reinforcing fibers 26. The concentration areas 28, 30 in the panel are strategically located to allow the panel 24 to crumple in a predetermined manner upon impact. Alternatively, the orientation of the reinforcing fibers can be positioned in an alternating fashion so that the panel will crumple in a predetermined manner when impacted. See Page 3 line 19 through Page 4, line 6.

Further, the panel 24 may additionally include a sheet of colored material 32 attached to the sheet of reinforced polymeric material 24. Preferably, the sheet of colored material 32 is molded to the reinforced polymeric material 24. No painting of the component is required when the sheet of colored material 32 is used. The sheet of colored material 32 is preferably a paintless film or alternatively pre-painted aluminum. See Page 4, lines 7-11.

An alternative embodiment of the vehicle body panel, shown in Figures 3A and 3B, includes polymeric material 34 that is reinforced with spaced mechanical ribs 36. The mechanical ribs 36 are preferably molded into the polymeric material 34 during the molding process. Preferably, the polymeric material 34 is a sheet. The ribs 36 face inward when the panel is mounted on a vehicle. Further, the mechanical ribs are positioned so that the panel 34 will crumple in a predetermined manner when impacted. A sheet of colored material 32 may also be attached to the polymeric material 34 that is reinforced with mechanical ribs 36. Preferably, the sheet of colored material 32 is molded to the polymeric material 34. See Page 4, lines 12-19.

Another alternative embodiment of the vehicle body panel 38 is shown in Figure 4. This embodiment of the panel 38 includes alternating sections of a rigid material 40 and a less rigid material 42. The less rigid material 42 is less rigid relative to the rigid material 40. Preferably, the rigid material 40 is made from a high density polymeric foam and the less rigid material 42 is made from a low density polymeric foam. The sections of foam 40, 42 are preferably arranged in rows. The sections 40, 42 are arranged so that the body panel 38 will crumple in a predetermined manner when impacted. For instance, if the body panel is impacted, the sections of low density polymeric foam 42 will yield before the sections of high density polymeric foam 40. Further, a sheet of colored material 32 can be attached to the alternating layers of high and low density foam 40, 42 so that the panel 38 does not need to be painted. The sheet of colored material 32 is preferably molded to the alternating layers of high and low density polymeric foam 40, 42. Again, material 32 faces outwardly when mounted on a vehicle. See Page 4, line 20 through Page 5, line 8.

Yet another alternative embodiment of the vehicle body panel 44 is shown in Figure 5. The vehicle body panel 44 is made from a polymeric material 46 that is reinforced with spaced metal

inserts 48. Preferably, the polymeric material 46 is a polymeric foam. The metal inserts 48 are preferably notched 50 so that they will deform in a predetermined manner under impact. The metal inserts 48 are preferably molded into the polymeric foam material 46. A sheet of colored material 32 can also be attached to the polymeric foam material 46 that is periodically reinforced with metal inserts 48 so that the body panel 44 does not need to be painted. See Page 5, lines 9-15.

With the use of spaced reinforcements, the subject invention provides a vehicle body panel that is less expensive to manufacture, does not require painting, and that is structurally sound yet crumples in a predetermined fashion to reduce the risk to a pedestrian in the case of an accident.

### **Issues**

Is the final rejection of claims 1, 2, 32, and 33 under 35 U.S.C. 102(b) proper over the reference of U.S. Patent No. 5,165,627 to Amano et al.?

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Is the final rejection of claims 3, 4, 10, 11, 14-16, 20-24, and 34-37 under 35 U.S.C. 103(a) proper over the combination of U.S. Patent No. 5,707,697 to Spain et al. in view of U.S. Patent No. 5,165,627 to Amano et al. and further in view of U.S. Patent No. 4,950,522 to Vogt et al.?

### **Grouping of Claims**

#### **I. 35 U.S.C 102(b) Rejections**

- A. The rejection of independent claim 1 is contested.
- B. The rejection of claim 2 is separately contested, i.e. claim 2 does not stand or fall with claim 1.
- C. The rejection of claim 32 is separately contested, i.e. claim 32 does not stand or fall with claim 1.

- D. The rejection of claim 33 is separately contested, i.e. claim 33 does not stand or fall with claim 1.

## II. 35 U.S.C. 103(a) Rejections

- A. The rejection of claims 3 and 10-11 is separately contested, i.e. claims 3 and 10-11 do not stand or fall with claim 1.
- B. The rejection of claim 4 is separately contested, i.e. claim 4 does not stand or fall with claim 3.
- C. The rejection of independent claim 14 is separately contested, i.e. claim 14 does not stand or fall with claim 1.
- D. The rejection of claim 15 is separately contested, i.e. claim 15 does not stand or fall with claim 14.
- E. The rejection of claim 16 is separately contested, i.e. claim 16 does not stand or fall with claim 15.
- F. The rejection of claim 34 is separately contested, i.e. claim 34 does not stand or fall with claim 16.
- G. The rejection of claim 35 is separately contested, i.e. claim 35 does not stand or fall with claim 34.
- H. The rejection of independent claim 20 is separately contested, i.e. claim 20 does not stand or fall with claims 1 or 14.
- I. The rejection of claims 21-22 is separately contested, i.e. claims 21-22 do not stand or fall with claim 20.
- J. The rejection of claim 23 is separately contested, i.e. claim 23 does not stand or fall with claim 21.

- K. The rejection of claim 24 is separately contested, i.e. claim 24 does not stand or fall with claim 23.
- L. The rejection of claim 36 is separately contested, i.e. claim 36 does not stand or fall with claim 20.
- M. The rejection of claim 37 is separately contested, i.e. claim 37 does not stand or fall with claim 36.

### **Patentability Arguments**

#### **I. 35 U.S.C. 102(b) Rejections**

##### **A. Claim 1**

Claim 1 stands rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,165,627 to Amano et al. (Amano). Claim 1 includes the combination of a body panel having spaced reinforcement on a sheet of material such that the panel crumples in a predetermined manner. In order to anticipate a claim, the cited reference must show each and every claimed feature. Amano does not disclose Appellant's invention as set forth in claim 1.

Amano does not disclose a vehicle body panel having spaced reinforcement such that the panel crumples in a predetermined manner. The examiner argues that Amano teaches a body panel 1a with spaced reinforcements 1c, but admits that Amano does not specifically teach crumpling of the panels in a predetermined manner. The examiner argues that because the panels are anisotropic, the panels would crumple in a predetermined manner. When a vehicle is subjected to a crash, the body panels without spaced reinforcements do not crumple in a predetermined manner but instead crumple in an undetermined manner. Vehicle crashes can occur in an infinite number of ways. With traditional body panels, it is impossible to predict beforehand exactly how a panel will crumple under a plurality of conditions that are infinitely variable such as speed, braking, steering, environmental,

and road conditions, for example. Appellant has invented a panel with spaced reinforcements such that the panel will crumple in a predictable or predetermined manner. According to Merriam Webster's Collegiate Dictionary, Tenth Edition, Merriam-Webster Incorporated, 1994, the term "predetermine" means "1 a: foreordain, predestine b: to determine beforehand 2: to impose a direction or tendency on beforehand."

Amano simply does not disclose the use of spaced reinforcement on a sheet of material to so that the panels crumple in a predetermined manner. The examiner argues that the corrugations of Amano can be broadly interpreted as being reinforcing in nature. Appellant respectfully traverses this characterization of the teachings of Amano. While it is well settled that terms in a claim are to be give their broadest reasonable interpretation, this interpretation must be consistent with the specification, with claim language being read in light of the specification as it would be interpreted by one of ordinary skill in the art. In re Bond, 15-USPQ2d 1566, 1567 (Fed. Cir. 1990).

The examiner has improperly expanded the meaning to be given to the claim language "spaced reinforcement on said sheet of material such that said panel crumples in a predetermined manner." As shown in the Figures and as described in the accompanying specification, Appellant's vehicle body panel is formed with spaced reinforcements such that the body panel that will crumple in a predisposed manner upon impact. Spaced reinforcements, as described in various embodiments in the application, inherently means there are areas in the panel that have reinforcements and which are separated from each other by areas in the panel that do not have the reinforcements. There is no such structure in Amano. Further, one of ordinary skill in the art would not consider the corrugations for sound deadening purposes as corresponding to the claimed spaced reinforcement, as argued by the examiner. Further, Amano would have to reason to have panels with spaced reinforcements so that the panels crumple in a predetermined manner because impact events for airplanes occur at very

high speeds and attempts to control or predetermine crumpling of the panels would be futile. Thus, Amano does not anticipate claim 1.

**B. Claim 2**

Claim 2 stands rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,165,627 to Amano et al. (Amano). Claim 2 includes the feature of the sheet being comprised of a polymer.

The examiner argues that Amano discloses that the invention can be made from fiber reinforced plastics. The reference in Amano to fiber-reinforced plastics simply means that the fuselage wall in Amano is made from a composite material. Amano discloses alternating overlying layers of woven material to form a cylindrical fuselage wall having greater rigidity in a circumferential direction than in an axial direction. There is no disclosure of spaced reinforcements on a polymer sheet of material in Amano as claimed by Appellant in claim 2.

The examiner further argues that claim 2 makes no mention of spaced reinforcements. Appellant respectfully traverses this characterization of claim 2. Claim 2 is dependent from claim 1, which includes the limitation of a spaced reinforcement on a sheet of material. Thus, claim 2 does include the term "spaced reinforcement." There is no teaching in Amano of a spaced reinforcement on a polymer sheet of material that allows the panel to crumple in a predetermined manner. Thus, Amano does not anticipate claim 2 and Appellant respectfully requests that the rejection be withdrawn.

**C. Claim 32**

Claim 32 stands rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,165,627 to Amano et al. (Amano). Claim 32 includes the feature of the sheet of material including



at least one generally planar portion with the spaced reinforcement being formed within the planar portion in an alternating pattern extending along a linear path.

The examiner argues, “the panels of Amano could be broadly interpreted as being ‘generally planar.’” While it is well settled that terms in a claim are to be given their broadest reasonable interpretation, this interpretation must be consistent with the specification, with claim language being read in light of the specification as it would be interpreted by one of ordinary skill in the art. In re Bond, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990). The examiner has improperly expanded the meaning of “generally planar.” As shown in the Figures and as described in the accompanying specification of the subject application, the vehicle body panel is a planar panel with the spaced reinforcement being formed within the planar portion in an alternating pattern extending along a linear path. There is no such structure in Amano, which is instead directed toward a cylindrical fuselage. According to Merriam Webster’s Collegiate Dictionary, Tenth Edition, Merriam-Webster Incorporated, 1994, the term “planar” is defined as “of, relating to, or lying in a plane” and the term “plane” is defined as “a flat or level surface . . . a surface of such nature that a straight line joining two of its points lies wholly in the surface.” One of ordinary skill in the art would not consider the cylindrical fuselage of Amano as corresponding to the claimed body panel with a generally planar portion with spaced reinforcement being formed in an alternating pattern along a linear path. Even assuming that the cylindrical fuselage could be interpreted to be “generally planar,” there is no teaching of spaced reinforcement being formed in an alternating pattern along a linear path. The fiber-reinforced plastic of Amano is made of a uniform composite material along the surface and is not formed in an alternating pattern along a linear path. Thus, Amano does not anticipate claim 32 and Appellant respectfully requests that the rejection be withdrawn.

**D. Claim 33**

Claim 33 stands rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,165,627 to Amano et al. (Amano). Claim 33 includes the feature of the spaced reinforcement crumpling in a generally linear direction in response to an impact force.

The examiner argues that the panel of Amano could crumple in such a path but admits that this is not specifically discussed in Amano. As Amano does not disclose or teach any type of controlled or predetermined crumpling, there certainly is no teaching of a planar body panel with spaced reinforcement being formed in alternating pattern along a linear path where the spaced reinforcement crumples in a generally linear direction in response to an impact force. Thus, Amano does not anticipate claim 33.

**II. 35 U.S.C. 103(a) Rejections**

**A. Claims 3 and 10-11**

Claims 3 and 10-11 stand rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 3 includes the feature of a sheet of colored material being attached to the sheet of material with spaced reinforcement.

First, Amano is not even relevant to Appellant's invention. Amano is directed toward the formation of a cylindrical inner fuselage wall for an aircraft and has nothing to do with forming a vehicle body panels with reinforcements to control crumpling in response to an impact force. The examiner has responded to Appellant's assertion by arguing, "the Examiner would first like to point out that an airplane is, in fact, a vehicle." Appellant would like to point out that Appellant never argued that an airplane was not a vehicle. Appellant was arguing that Amano was non-analogous art,

i.e., not relevant as a reference because Amano is directed toward the formation of a cylindrical inner fuselage wall to improve sound deadening in an aircraft and has nothing to do with forming a vehicle body panel in such a manner as to achieve predetermined crumpling in response to an impact force.

"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). The Amano reference is not analogous art to Spain, Vogt, or to Appellant's invention. The Amano reference is not in Appellant's field of endeavor and is not reasonably pertinent to the particular problem that the Appellant has solved. The sound deadening techniques for an aircraft disclosed in Amano do not include any pertinent information that would help Appellant solve problems relating to forming a vehicle body panel in a manner to control crumpling in response to an impact event. Thus, Amano is not in the field of Appellant's endeavor.

Further, Amano is not reasonably pertinent to the Appellant's particular problem. Amano reference is directed toward providing a solution to reduce loud external noises from being transmitted into the passenger cabin of an airplane. Appellant would never look to the field of sound deadening techniques for aircraft to solve problems related to controlling vehicle panel crumpling in response to an impact event.

As discussed in the background of the subject application, one of the features that Appellant was seeking to produce was a vehicle body panel that is structurally sound yet crumples in a predetermined fashion to reduce the risk to a pedestrian in the case of an accident. One of ordinary skill in the art would hardly look at aircraft fuselage technology to address this problem. Further, there would be no reason to control body panel crumpling for an airplane, as airplane crashes are at very high speeds and controlled crumpling of body panels at crash speeds over five hundred miles

per hour would not provide any added benefits to the passengers or to anyone being hit by a crashing airplane. Thus, Amano is simply not relevant to Appellant's invention

Second, there is no motivation or suggestion to modify Spain with Amano or Vogt. Spain is directed toward the formation of a molded plastic vehicle body panel. Amano is directed toward the formation of a cylindrical inner fuselage wall to improve sound deadening in an aircraft. As discussed in the background of the subject application, one of the features that Appellant was seeking to produce was a vehicle body panel that is structurally sound yet crumples in a predetermined fashion to reduce the risk to a pedestrian in the case of an accident. One of ordinary skill in the art would not look to the teachings of Amano concerning aircraft fuselage technology and sound deadening techniques to address this problem. Further, as discussed above, Amano does not teach the use of spaced reinforcement in a body panel such that the panel crumples in a predetermined manner as there is no reason to control body panel crumpling for an airplane, because impact speeds for airplane crashes are so high that controlling crumpling in a predetermined manner would not provide any benefit.

Vogt teaches the use of a vehicle body panel having inner and outer skins bonded to a soft core structure made from foam, a honeycomb structure, or paper webbing to form crumple zones. Thus, while Vogt teaches the use of crumple zones, this still does not lead one of ordinary skill in the art to incorporate the teachings of Amano into Spain. One of ordinary skill in the art simply would not look to the teachings of Amano to address problems related to reducing pedestrian injuries by improving vehicle crumple zones. One of ordinary skill in the art would have found no reason, suggestion, or incentive for attempting to combine these references so as to arrive at the subject matter of claim 3 other than through the luxury of hindsight accorded one who first viewed the Appellant's disclosure. This, of course, is not a proper basis for a rejection. See In re Fritch, 972 F. 2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). Thus, there is no motivation in either

Amano, Vogt, Spain or in the knowledge generally available to one of ordinary skill in the art to modify Spain with the teachings of Amano to include spaced reinforcements in a sheet of material attached to a colored sheet of material to form a body panel.

Third, the combined references do not disclose, suggest, or teach the features of claim 3. As discussed above, claim 3 includes the combination of a polymer sheet with a sheet of colored material attached to the polymer sheet and with spaced reinforcements on the sheet of material such that the panel crumples in a predetermined manner. The examiner admits that Spain does not disclose this combination of features. Amano also does not disclose, suggest, or teach the use of spaced reinforcement on a sheet of material to achieve predetermined crumpling. The examiner argues that the corrugations of Amano can be broadly interpreted as being reinforcing in nature. Appellant respectfully traverses this characterization of the teachings of Amano. As discussed above, the examiner has improperly expanded the meaning to be give to the claim language "spaced reinforcement on said sheet of material such that said panel crumples in a predetermined manner," especially in light of the description of the subject invention.

As shown in the Figures and as described in the accompanying specification of the subject application, the vehicle body panel is formed with spaced reinforcements such that the body panel that will crumple in a predisposed manner upon impact. Spaced reinforcements, as described in various embodiments in the application, inherently means there are areas in the panel that have reinforcements and which are separated from each other by areas in the panel that do not have the reinforcements. There is no such structure in Amano. Further, one of ordinary skill in the art would not consider the corrugations for sound deadening purposes as corresponding to the claimed spaced reinforcement. Thus, Amano does disclose, suggest or teach the use of space reinforcements in combination with a colored sheet of material as set forth in claim 3.

Vogt also does not disclose, suggest, or teach the combination of elements in claim 3. Vogt teaches the use of a body panel having inner and outer skins bonded to a soft core structure made from foam, a honeycomb structure, or paper webbing to form crumple zones, which is a structure very different than that claimed by Appellant. Thus, even assuming that the combination of the Spain, Amano, and Vogt references is proper, the references as taken together do not teach forming spaced reinforcements in combination with the sheet of colored material as set forth in claim 3.

For the reasons discussed above, in addition to the reasons set forth with regard to claim 1, the rejection of claims 3 and 10-11 under 35 U.S.C. 103(a) is improper and should be withdrawn.

**B. Claim 4**

Claim 4 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 4 includes the feature of the sheet of material being reinforced with spaced reinforcing fibers.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 4. The examiner argues that Amano teaches the use of spaced reinforcing fibers.

The reference in Amano to fiber-reinforced plastics simply means that the fuselage wall in Amano is made from a composite material. Amano discloses alternating overlying layers of woven material to form a cylindrical fuselage wall where the fuselage is formed from a uniform composite material along the surface. Amano simply does not teach the use of spaced reinforcing fibers in the sheet of material as claimed by Appellant in claim 4. Thus, the rejection is improper and should be withdrawn.

C. Claim 14

Claim 14 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 14 is directed toward a vehicle body panel with a polymeric material reinforced with a spaced reinforcing material on one side and a colored material attached to an opposed side of the reinforced polymeric material wherein the colored material defines an exterior surface of a vehicle body panel and the polymeric material with the spaced reinforcing material is deformable in a predetermined manner in response to an impact force.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 15.

Spain does not disclose a body panel formed from a polymeric material reinforced with a spaced reinforcing material on one side and a colored material attached to an opposite side. Amano also does not disclose this feature and further does not teach a vehicle body panel having spaced reinforcement such that the panel is deformable in a predetermined manner in response to an impact force.

The examiner argues that Amano teaches a body panel 1a with spaced reinforcements 1c, but admits that Amano does not specifically teach crumpling of the panels in a predetermined manner. The examiner argues that because the panels are anisotropic, the panels would crumple in a predetermined manner. When a vehicle is subjected to a crash, the body panels without spaced reinforcements do not deform in a predetermined manner but instead crumple in an undetermined manner, as discussed above. Appellant's unique vehicle body panel has spaced reinforcing material

on one side with colored material attached on an opposite to form a finished body panel that will deform in predictable or predetermined manner in response to an impact force. According to Merriam Webster's Collegiate Dictionary, Tenth Edition, Merriam-Webster Incorporated, 1994, the term "predetermine" means "1 a: foreordain, predestine b: to determine beforehand 2: to impose a direction or tendency on beforehand."

Amano simply does not teach the use of spaced reinforcing material on one side of a sheet of material to achieve deformation in predetermined manner in response to an impact force. The examiner argues that the corrugations of Amano can be broadly interpreted as being reinforcing in nature. Appellant respectfully traverses this characterization of the teachings of Amano. As discussed above with regard to claim 1, the examiner has improperly expanded the meaning to be given to the claim language with regard to "a polymeric material reinforced with a spaced reinforcing material." As shown in the Figures and as described in the accompanying specification, the vehicle body panel is formed with spaced reinforcements such that the body panel that will crumple in a predisposed manner upon impact. Spaced reinforcements, as described in various embodiments in the application inherently means there are areas in the panel that have reinforcements and which are separated from each other by areas in the panel that do not have the reinforcements. There is no such structure in Amano. Further, one of ordinary skill in the art would not consider the corrugations for sound deadening purposes as corresponding to the claimed spaced reinforcement. Further, Amano would have to reason to have panels with spaced reinforcements so that the panels crumple in a predetermined manner because impact events for airplanes are at very high speeds and attempts to control crumpling of the panels would be futile. Finally, Amano does not disclose or teach the use of a polymeric material with spaced reinforcing material used on one side as claimed by Appellant. Thus, the rejection is improper and should be withdrawn.



**D. Claim 15**

Claim 15 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 15 includes the feature of the reinforcing material comprising reinforcing fibers.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 14.

For the reasons discussed above with regard to claim 14 Amano does not disclose, suggest, or teach the use of a polymeric material with spaced reinforcing material used on one side. Amano also does not teach the use of the spaced reinforcing material including reinforcing fibers on one side. The reference in Amano to fiber-reinforced plastics simply means that the fuselage wall in Amano is made from a composite material. Amano discloses overlying layers of woven material to form a cylindrical fuselage wall where the fuselage is formed as a uniform body panel having a constant type of composite material along the surface and through the thickness. Amano simply does not teach the use of spaced reinforcing fibers in the sheet of material as claimed by Appellant in claim 15. Thus, the rejection is improper and should be withdrawn.

**E. Claim 16**

Claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 16 includes the feature of the colored material and the polymeric material being molded together to form a vehicle body

panel with the reinforcing fibers being orientated into the reinforcing material in laterally spaced rows across the vehicle body panel.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 16.

As discussed above with regard to claim 15, Amano does not teach the use of a spaced reinforcing material on one side of the polymeric material that includes reinforcing fibers. Amano also does not teach that the reinforcing material is orientated in laterally spaced rows across the body panel. The Examiner cites Figure 10 of Amano as showing reinforcing fibers in laterally spaced rows. Appellant respectfully traverses this characterization of Figure 10. Figure 10 simply shows a schematic formation of a composite fiber mat. Figure 10 does not show spaced reinforcing material with reinforcing fibers being laterally spaced rows across the body panel as claimed by Appellant in claim 16. Thus, the rejection is improper and should be withdrawn.

**F. Claim 34**

Claim 34 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 34 includes the feature of the laterally spaced rows including a first plurality of rows having a first concentration of the reinforcing fibers in the polymeric material and a second plurality of rows having a second concentration of the reinforcing fibers in the polymeric material that is less than the first concentration.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 34.

As discussed above with regard to claim 15, Amano does not teach the use of a spaced reinforcing material on one side of the polymeric material that includes reinforcing fibers. Amano also does not teach that the reinforcing material is orientated in laterally spaced rows across the body panel. Further, Amano does not disclose or teach the use of a first plurality of rows having a higher concentration of reinforcing fibers than a second plurality of laterally spaced rows.

The Examiner cites Figure 10 of Amano as showing reinforcing fibers in laterally spaced rows. Figure 10 simply shows a schematic formation of a composite fiber mat. Figure 10 does not show spaced reinforcing material with reinforcing fibers being laterally spaced rows across the body panel as claimed by Appellant in claim 34. Further there is no teaching in any of the references of laterally spaced rows with varying concentrations of reinforcing fibers. Thus, the rejection is improper and should be withdrawn.

**G. Claim 35**

Claim 35 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 35 includes the feature of the first and second plurality of rows alternating with each other in a linear direction across the body panel.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 35.

As discussed above with regard to claim 15, Amano does not teach the use of a spaced reinforcing material on one side of the polymeric material that includes reinforcing fibers. Amano also does not teach that the reinforcing material is orientated in laterally spaced rows across the body panel. Further, Amano does not disclose or teach the use of a first plurality of rows having a higher concentration of reinforcing fibers than a second plurality of laterally spaced rows where the rows are alternating with each other in a linear direction across the body panel.

The Examiner cites Figure 10 of Amano as showing reinforcing fibers in laterally spaced rows. Figure 10 simply shows a schematic formation of a composite fiber mat. Figure 10 does not show spaced reinforcing material with reinforcing fibers being laterally spaced rows across the body panel in an alternating pattern as claimed by Appellant in claim 35. Further there is no teaching of laterally spaced rows with varying concentrations of reinforcing fibers being orientated in an alternating pattern with regard to each other. Amano only teaches laying different types of composite mats on top of each other and does not teach spacing different mats laterally apart relative to each other along the surface of the panel. Thus, the rejection is improper and should be withdrawn.

**H. Claim 20**

Claim 20 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 20 includes a colored layer forming an exterior surface of a vehicle body panel and a reinforcement layer attached to said colored layer and including a plurality of first sections having a first deformability and a plurality of second sections having a second deformability that is less than said first deformability wherein said first and second sections alternate in a predetermined pattern laterally across the body panel.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 20.

None of the references teach first and second sections of varying deformability that alternate in a predetermined pattern laterally across the body panel as set forth in claim 20. The reinforcements (1c) indicated by Examiner in Amano are not reinforcements for a body panel and in fact actually decrease the circumferential tensile strength of the cylindrical vessel. The corrugations 1c are formed within the cylinder to reduce the ring frequency. Amano does discuss anisotropic formation of a cylinder where the tensile rigidity in the circumferential direction is less than the tensile rigidity in the axial direction but this feature is specifically described as being a benefit related to a cylindrical component and not to that of a flat plate. See column 1, lines 14-64. Thus, Amano is directed toward issues specifically related to cylindrical components, which are very different than the planar vehicle body panels described in Spain and Vogt.

The examiner argues that vehicle body panels have some amount of curvature. Flat panels with "some" amount of curvature are very different than cylindrical components. Further, airplane fuselages are formed as cylindrical components because of the specific benefits provided by cylindrical pressure vessels. Automobile panels are not subjected to the same type of pressure stresses that airplane fuselages are subject to and thus, have very different design requirements. There are no automobile panels, that Appellant is aware of, that are shaped as a cylinder and which are subjected to the extreme pressure and environmental conditions that an airplane is subjected to at 30,000 feet. If one of ordinary skill in the art were asked, which of a cylinder or flat sheet, an automobile body panel more closely resembled, one of ordinary skill in the art would certainly reply "flat sheet." Further, Appellant was simply pointing out that any benefits taught by Amano are

specifically directed toward a cylindrical fuselage and are not applicable to a flat plate component. Thus, there would be no reason incorporate the teachings of Amano into Spain.

Further, the Examiner cites Figure 10 of Amano as showing reinforcing fibers in laterally spaced rows. Appellant respectfully traverses this characterization of Figure 10. Figure 10 simply shows the schematic formation of a composite mat with layers having different fiber concentrations being overlaid on top of one another to form a composite cylindrical pressure vessel. Figure 10 does not show first and second sections, as defined in claim 20, which *alternate in a predetermined pattern laterally across the body panel* as claimed by Appellant in claim 20. In fact, the surface that extends across the vessel portion in Figure 10 is constant in a lateral direction throughout it's cross-section, i.e. presents a uniform lateral surface composed of a single type of material, there is no alternating pattern.

Finally, Amano does not disclose, suggest or teach that the colored and reinforcement layers are deformable in a controlled manner in response to an impact force as claimed by Appellant. The examiner admits that Amano does not discuss crumpling or deformation of the patterns but argues that it would happen in a predetermined manner due to the anisotropic design. As discussed above with regard to claim 1, Amano does not teach predetermined crumpling. Further, Amano certainly does not teach panel deformation in a *controlled* manner in response to an impact force as a result of the orientation of the predetermined alternating pattern of the first and second sections spaced laterally across the body panel, as set forth in claim 20. Thus, the rejection is improper and should be withdrawn.

**I. Claims 21-22**

Claims 21-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al.

(Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 21 includes the feature of colored layer and said reinforcement layer are integrally molded together as one piece.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 21.

The examiner argues that the phrase "molded together" carries little patentable weight. However, the examiner must read all of the claim language of claim 21, which includes the language that the colored layer and the reinforcement layer are a single piece. None of the references teach this combination. There is no reinforcement layer in Spain. The reinforcement member in Vogt is made up of several different components and is not formed as one piece with the colored layer. Further, there is no teaching in Amano of forming the colored layer and the reinforcing layer as one piece, especially in light of the fact, as discussed above with regard to claim 20, that Amano does not teach the use of having any type of reinforcing layer with an alternating predetermined pattern of rows having different deformability properties, as claimed by Appellant. Thus, the rejection is improper and should be withdrawn.

**J. Claim 23**

Claim 23 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 23 includes the feature of the reinforcement layer being comprised of a polymeric material with reinforcing fibers with the first sections having a high concentration of reinforcing fibers and the second sections having a low concentration of reinforcing fibers.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 23.

The reference in Amano to fiber-reinforced plastics simply means that the fuselage wall in Amano is made from a composite material. Amano discloses alternating overlying layers of woven material to form a cylindrical fuselage wall where the fuselage is formed from a constant material along the surface. Amano simply does not teach the use of spaced reinforcing fibers in the sheet of material as claimed by Appellant in claim 23. Further, there is no teaching of alternating rows of reinforcing fibers of varying concentrations in a predetermined pattern as claimed by Appellant. Amano only teaches carrying the types of mats that are laid on top of each other to determine the thickness of the panel. Thus, the rejection is improper and should be withdrawn.

**K. Claim 24**

Claim 24 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 24 includes the feature of the first and second sections being alternating laterally spaced rows.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 23.

For the reasons discussed above with regard to claim 23 Amano does not teach the use of alternating reinforcing fibers in rows of alternating fiber concentrations. Amano also does not teach alternating these sections in laterally spaced rows as claimed by Appellant. Amano teaches the use of woven fiber mats overlaid on top of one another to form a composite panel. There is no disclosure that these mats of alternating laterally spaced rows that are of alternating fiber



concentrations relative to adjacent rows as claimed by Appellant. Thus, the rejection is improper and should be withdrawn.

**L. Claim 36**

Claim 36 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano) and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 36 includes the feature of the reinforcement layer being comprised of a polymeric material and reinforcing fibers with the first sections having a high concentration of reinforcing fibers and the second sections having a low concentration of reinforcing fibers and wherein the first and second sections are interspaced with one another in a generally planar direction across the body panel.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 36.

For the reasons discussed above with regard to claim 23 Amano does not teach the use of alternating reinforcing fibers in rows of alternating fiber concentrations. Further, Amano does not teach the first and second sections, as defined by Appellant in claim 36, being interspaced with one another in a generally planar direction across the body panel. As discussed above with regard to claim 32, the examiner has improperly expanded the meaning of "generally planar" to include a cylindrical pressure vessel. Thus, the rejection is improper and should be withdrawn.

**M. Claim 37**

Claim 37 stands rejected under 35 U.S.C. 103(a) as being unpatentable based on U.S. Patent No. 5,707,697 to Spain et al. (Spain) in view of U.S. Patent No. 5,165,627 to Amano et al. (Amano)

and further in view of U.S. Patent No. 4,950,522 to Vogt et al. (Vogt). Claim 37 includes the feature of the first and second sections alternate with one another in regular intervals.

For the reasons discussed above with regard to claim 3, Amano is non-analogous art and there is no suggestion or motivation to combine the references of Spain, Amano, and Vogt. Further, the combination of references does not disclose, suggest, or teach the features set forth in claim 37.

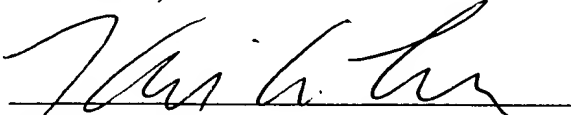
For the reasons discussed above with regard to claim 23 Amano does not teach the use of alternating reinforcing fibers in rows of alternating fiber concentrations. Further, Amano does not teach the first and second sections, as defined by Appellant in claim 37, being interspaced with one another in a generally planar direction across the body panel at regular intervals. Different type of woven mats are overlaid on top of each other but the differences do not extend in a lateral direction across the body panels at a regular interval in Amano. Thus, the rejection is improper and should be withdrawn.

### **Closing**

For the reasons set forth above, the rejection of all claims is improper and should be reversed. Appellant earnestly requests such an action.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that the attached Appeal Brief is being deposited in triplicate with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to Box AF, Assistant Commissioner of Patents, Washington, D.C. 20231, on this 11<sup>th</sup> day of April, 2003

  
Laura Combs

**CLAIM APPENDIX**

1. A vehicle body panel comprising:  
a sheet of material; and  
spaced reinforcement on said sheet of material such that said panel crumples in a predetermined manner.
2. The body panel of claim 1 wherein said sheet is made from a polymer.
3. The body panel of claim 1 further comprising a sheet of colored material attached to said sheet of material.
4. The body panel of claim 3 wherein said sheet of material is reinforced with spaced reinforcing fibers.
5. The body panel of claim 3 wherein said sheet of material is reinforced with spaced ribs.
6. The body panel of claim 3 wherein said sheet comprises alternating sections of a rigid polymeric material and a less rigid polymeric material.
7. The body panel of claim 6 wherein said rigid polymeric material is a high density polymeric foam and said less rigid polymeric material is a low density polymeric foam.

8. The body panel of claim 3 wherein said sheet is made from polymeric foam and is reinforced with spaced metal inserts.
9. The body panel of claim 8 wherein said metal inserts are notched.
10. The body panel of claim 3 wherein said sheet of colored material is a paintless film.
11. The body panel of claim 3 wherein said sheet of colored material is a pre-painted aluminum.
12. A vehicle body panel comprising:  
a polymeric material reinforced with spaced ribs on one side; and  
a colored material attached to an opposed side of said polymeric material.
13. The body panel of claim 12 wherein said sheet of polymeric material and said ribs are a single molded component.
14. A vehicle body panel comprising:  
a polymeric material reinforced with a spaced reinforcing material on one side; and  
a colored material attached to an opposed side of said reinforced polymeric material wherein said colored material defines an exterior surface of a vehicle body panel and said polymeric material with said spaced reinforcing material is deformable in a predetermined manner in response to an impact force.
15. The body panel of claim 14 wherein said reinforcing material comprises reinforcing fibers.

16. The body panel of claim 15 wherein said colored material and said polymeric material are molded together to form a vehicle body panel and wherein said reinforcing fibers are orientated into said reinforcing material in laterally spaced rows across the vehicle body panel.
17. The body panel of claim 14 wherein said reinforcing material comprises metal inserts.
18. The body panel of claim 17 further having foam as part of said polymeric material and wherein said metal inserts are spaced and molded into said foam.
19. The body panel of claim 14 wherein said reinforcing material comprises alternating rows of a low density foam and a high density foam wherein said rows of low density foam and said rows of high density foam are attached to said polymeric material.
20. A vehicle body panel comprising:
  - a colored layer forming an exterior surface of a vehicle body panel; and
  - a reinforcement layer attached to said colored layer and including a plurality of first sections having a first deformability and a plurality of second sections having a second deformability that is less than said first deformability wherein said first and second sections alternate in a predetermined pattern laterally across the body panel such that said colored and reinforcement layers are deformable in a controlled manner in response to an impact force applied to the body panel.
21. The body panel of claim 20 wherein said colored layer and said reinforcement layer are integrally molded together as one piece.

22. The body panel of claim 21 wherein said colored layer is comprised of a paintless polymer film and said reinforcement layer is comprised of a polymeric material.

23. The body panel of claim 21 wherein said reinforcement layer is comprised of a polymeric material with reinforcing fibers with said first sections having a high concentration of reinforcing fibers and said second sections having a low concentration of reinforcing fibers.

24. The body panel of claim 23 wherein said first and second sections are alternating laterally spaced rows.

25. The body panel of claim 21 wherein said reinforcement layer is comprised of a polymeric material with said first sections including at least one rib extending in an opposite direction from said exterior surface.

26. The body panel of claim 21 wherein said reinforcement layer is comprised of a polymeric material with said first sections comprising a high density polymeric foam and said second sections comprising a low density polymeric foam.

27. The body panel of claim 26 wherein said first and second sections are alternating laterally spaced rows.

28. The body panel of claim 21 wherein said reinforcement layer is comprised of a polymeric material with said first sections comprising a polymeric foam and said section sections comprising metal inserts.

29. The body panel of claim 28 wherein said metal inserts include at least one notch for initiating controlled deformation during application of said impact force.

30. The body panel of claim 29 wherein said first and second sections are alternating laterally spaced rows.

31. A method for forming a vehicle body panel incorporating a predetermined crumple pattern in response to an impact force comprising the steps of:

- (a) placing a colored layer in a mold;
- (b) forming a reinforcement layer with a plurality of first sections having a first deformability and a plurality of second sections having a second deformability that is less than said first deformability by alternating the first and second sections laterally across the reinforcement layer in a predetermined pattern;
- (c) placing the reinforcement layer in the mold;
- (d) molding the colored layer to the reinforcement layer to form a body panel with the colored layer defining an exterior surface of the vehicle body panel and with the reinforcement layer controlling deformation of the vehicle body panel in a predetermined manner in response to an impact force applied to the body panel.



32. The body panel of claim 1 wherein sheet of material includes at least one generally planar portion with said spaced reinforcement being formed within said planar portion in an alternating pattern extending along a linear path.

33. The body panel of claim 32 wherein said spaced reinforcement crumples in a generally linear direction in response to an impact force.

34. The body panel of claim 16 wherein said laterally spaced rows include a first plurality of rows having a first concentration of said reinforcing fibers in said polymeric material and a second plurality of rows having a second concentration of said reinforcing fibers in said polymeric material that is less than said first concentration.

35. The body panel of claim 34 wherein said first and second plurality of rows alternate with each other in a linear direction across said body panel.

36. The body panel of claim 20 wherein said reinforcement layer is comprised of a polymeric material and reinforcing fibers with said first sections having a high concentration of reinforcing fibers and said second sections having a low concentration of reinforcing fibers and wherein said first and second sections are interspaced with one another in a generally planar direction across said body panel.

37. The body panel of claim 36 wherein said first and second sections alternate with one another in regular intervals.